

REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have amended claim 1 to recite a coating film “adapted to be formed on a substrate”: and to recite that the compound (C) has a wetting property in the coating composition with respect to the substrate, so as to increase the wetting property of the coating composition to the substrate as compared to the wetting property of a composition of compound (A) and catalyst (B) and no compound (C). Applicants have further amended claim 1 to recite that the polyether group “contains” a hydrocarbon group having 1-36 carbon atoms in total. Furthermore, in light of amendments to claim 1, reciting the coating film being adapted to be formed on a “substrate”, various of the other claims in the application have been amended to recite “the” substrate. Claim 2 has been amended to correct a grammatical error therein. In addition, in light of amendments to claim 1, claim 15 has been cancelled without prejudice or disclaimer; and, moreover, claim 10 has also been cancelled without prejudice or disclaimer.

The rejection of claims under the second paragraph of 35 U.S.C. § 112, on the basis that claim 1 contains the phrase “which may contain a hydrocarbon group...”, is moot, in light of deletion of the word “may” from claim 1. The basis for rejection of claim 10 as set forth in the third paragraph of Item 2, on page 2 of the Office Action mailed July 2, 2009, is moot, in light of present cancelling of claim 10 without prejudice or disclaimer.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the references applied by the Examiner in rejecting claims in the Office Action mailed July 2, 2009, that is, the teachings of the U.S. patents to Fuchs, No. 5,486,322, to

Ishikawa, et al., No. 5,428,092, to Robertson, No. 4,477,366, to Lammerting, et al., No. 5,043,409, and to Dohi, et al., No. 4,235,654, and International (PCT) Published Application No. WO 02/083763, under the provisions of 35 U.S.C. § 103.

In the following, No. WO 02/083763 will be discussed with reference to U.S. Patent No. 7,169,845 to Tamura, et al., which issued from a U.S. patent application which is a National Stage application of the PCT Application published as No. WO 02/083763.

It is respectfully submitted that the teachings of the references as applied by the Examiner in the Office Action mailed July 2, 2009, would have neither disclosed nor would have suggested the presently claimed coating film, adapted to be formed on a substrate, formed by polymerizing and curing a coating composition containing, in addition to specified amounts of a thiirane ring-containing compound and a catalyst for accelerating polymerization thereof, (C) a specified amount of a modified silicone oil selected from the group consisting of the modified silicone oils with the formulas (3)-(6) in claim 1, this modified silicone oil having a wetting property wherein this compound (C) (modified silicone oil) increases the wetting property of the coating composition as compared to the wetting property of a composition containing the thiirane ring-containing compound and the catalyst and no compound (C).

As will be discussed in more detail infra, it is respectfully submitted that the applied references would have neither taught nor would have suggested a coating film, adapted to be formed on a substrate, and with the component (C) thereof having the wetting property so as to increase wetting property of the coating composition to the substrate, as in the present claims. It is respectfully submitted that this recitation of the film being a coating film, and properties of the component

(C) and composition including component (C) from which the coating film is obtained, must be given weight in determining patentability of the presently claimed subject matter, particularly with respect to the product in claim 7, the coating film on the substrate as in claims 18-20, and the process for coating as in claims 21-23. It is respectfully submitted that the descriptor “coating” gives life and meaning to claims directed to the coating film, and thus must be given weight in determining patentability, and that the recited properties also must be given weight. Note Manual of Patent Examining Procedure (MPEP) 2111.02; see also Kropa v. Robie 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Furthermore, and as also discussed in more detail infra, a wetting property of the coating composition forming the coating film is an important feature of the present invention for providing a desired coating thickness, for example. Note that a wetting property, desired by the present invention, is diametrically opposed to a mold release property, wherein it is desired that there not be a “wetting” of the mold. According to the present invention, by using the specific modified silicone oils as claimed for compound (C), in amounts as in the present claims, together with the other specified components of the coating composition, although a mold release effect would be ordinarily expected surprisingly a wetting property is obtained, achieving objectives according to the present invention.

In addition, it is respectfully submitted that these references as applied by the Examiner would have neither disclosed nor would have suggested such a coating film as in the present claims, having features as discussed previously in connection with claim 1, and having further features as in the dependent claims presently in the application, including (but not limited to) wherein the coating film has a thickness as in claims 11-13; and/or wherein the coating composition utilized in forming the

coating film further includes a silane coupling agent (see claim 2), or wherein the coating film further includes an inorganic filler (see claim 14); and/or further definition of the compound (A) as in claims 4 and 5; and/or amount of the compound (C) in the coating composition as in claims 16 and 17.

Furthermore, it is respectfully submitted that the references as applied by the Examiner would have neither disclosed nor would have suggested the coating film as discussed previously in connection with claim 1, on the substrate, thereby forming a coated substrate (see claim 18), in particular wherein the substrate is made of a material as in claims 19 and 20; and/or wherein this coating film is provided on a surface of an optical product, as in claims 7 and 10.

Moreover, it is respectfully submitted that the teachings of these applied references would have neither disclosed nor would have suggested such a process for coating as in the present claims, including wherein the coating composition from which the coating film according to claims 1, 2 and 4, respectively, is obtained, is formed on the substrate (note claims 21-23).

The invention being claimed in the above-identified application is directed to coating films obtained by polymerizing and curing a composition including a thiirane ring-containing compound, (optical) products provided on a surface thereof with such coating film, and processes of forming such coating film on a substrate.

As described in the paragraph bridging pages 1 and 2 of Applicants' specification, the present inventors have found novel sulfur-containing compounds having episulfide structures, and have developed transparent resins having a high refractive index. Such compounds have been disclosed as being cast into a mold, and then polymerized and cured to obtain a cured product thereof.

But there is a strong demand for incorporating the transparent resins in coating compositions, for coating various substrates.

However, since film materials made of the transparent resins generally exhibit a poor wetting property to various substrates, it is difficult to stably form a thin film having a thickness of from several μm to several tens μ . Note, for example, page 2, lines 5-8 of Applicants' specification.

As described in the last paragraph on page 2 of Applicants' specification, there have been proposed compositions composed of the thiirane ring-containing compound and a silane coupling agent; however, such silane coupling agents have been added in order to achieve proper molding, not to increase wetting of a substrate on which the coating film is formed. Note also the paragraph bridging pages 2 and 3 of Applicants' specification, describing other uses of thiirane ring-containing compounds, including in coating films used for dental purposes, required to exhibit a high hiding property.

Against this background, it is still desired to provide coating films having a high refractive index, little discoloration and having transparency, uniformity and adhesion property, formed from coating compositions having a high wetting property.

As a result of extensive studies, Applicants have found that coating films formed by polymerizing and curing a coating composition as in the present claims exhibit a high refractive index, little discoloration and excellent transparency and uniformity. Moreover, Applicants have found that a coating composition utilized for forming the coating film of the present invention exhibits a good wetting property, wherein, for example, the compositions include the modified silicone oil, in specified amounts, as recited in the present claims.

Tamura, et al. discloses a composition for resin suitable as a starting material for an optical material, the resin composition comprising an episulfide compound having, in one molecule, at least one epithio structure represented by Formula (2) at column 2, line 50 of this patent, and a polymerization regulator as in Formula (1) at column 2, line 60 of this patent and/or a halide (halogen-containing stabilizer) of a 13-16-group element of the long periodic table, a halogen compound of silicon, germanium, tin or antimony being particularly preferred. In column 28, lines 20-37, of this patent, it is disclosed that when the cured resin is difficult to release from molds after the polymerization, it is effective to use a known external or internal mold releasing agent, thereby improving the releasability from the molds of the cured material being formed, with examples of the internal mold releasing agent being given. See also column 3, line 50, through column 4, line 20, for disclosure of the polymerization regulator; and column 4, line 23 to column 6, line 51, for disclosure of the halogen-containing stabilizer.

It is respectfully submitted that Tamura, et al. discloses a composition for an optical article itself. It is respectfully submitted that this patent does not disclose, nor would have suggested, a coating film as in the present claims, adapted to be formed on a substrate.

Furthermore, it is respectfully submitted that this reference does not disclose, nor would have suggested, such coating film obtained by polymerizing and curing a coating composition including, inter alia, the compound (C) which is a modified silicone oil selected from those with Formulas (3)-(6), especially wherein this compound (C), has a wetting property in the coating composition with respect to the substrate, so as to increase the wetting property of the coating composition to the

substrate as compared to the wetting property of a composition of compound (A) and catalyst (B) and no compound (C).

The contention by the Examiner that Tamura, et al. teaches an episulfide composition containing a thiirane ring compound and a catalyst, is noted. The Examiner has not even referred to disclosure in Tamura, et al. of a coating film; as contended previously, and as will be shown in the following, is respectfully submitted that Tamura, et al., either alone or in combination with the teachings of the other applied references, would have neither disclosed nor would have suggested the coating film, or process for coating, or coated substrate/product, as in the present claims.

It is respectfully submitted that the secondary references as applied by the Examiner would not have rectified the deficiencies of Tamura, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Thus, Fuchs discloses a protective covering for human body members, the protective covering having an inner layer and outer layer, with a layer of protective solution (such as an antimicrobial solution) being disposed between the inner and outer layers, and an impermeable seal being provided between the layers to contain the protective solution therebetween. See column 2, lines 7-13. This patent also discloses in column 10, lines 29-59, a technique for forming a multi-layer glove, including use of a layer-forming solution which may comprise a release agent, preferred release agents including organosiloxane (i.e. silicone) compounds.

Ishikawa, et al. discloses a release agent comprising organosilicon compounds, the release agent composition comprising a mixture of a specified amino-functional diorganopolysiloxane and an amine-free dimethylsiloxane. See

column 2, lines 45-56. See also column 2, lines 27-37. Note, further, column 4, lines 60 and 61; and column 5, lines 39-50, describing that the release agent composition is useful as release-improving additives for various thermosetting and thermoplastic resins, and organic rubbers.

Robertson discloses dispersions or blends of silicone compounds which act as superior internal mold release agents when added to reactive ingredients of polyurethane and polyurea forming resin systems, the blends being described most generally from column 2, line 64, through column 3, line 54. Note also column 6, lines 24-28, describing silicone surfactants used as dispersing agents and inhibitors for the described polysiloxane mold release agent to make polyisocyanate liquid dispersions. Note also column 8, lines 33-41, of this patent.

Lammerting, et al. discloses preparation of molded polyurethane and polyurea articles in the presence of a release agent, with the release agents being described most generally from column 3, line 55, through column 4, line 21.

It is to be emphasized that each of the secondary references used together with the teachings of Tamura, et al. disclose release agent compositions. However, the modified silicone oil according to the present invention does not have a function as a mold release agent, but rather is used in order to enhance wetting properties, as recited in all of the present claims. It is respectfully submitted that a wetting property is contrary to the function of the mold release agent. It is respectfully submitted that the teachings of each of Fuchs, Ishikawa, Robertson and Lammerting, et al., even if properly combinable with the teachings of Tamura, et al., would have neither disclosed nor would have suggested, and in fact would have taught away from, the compound (C) having a wetting property in the coating composition with respect to the substrate, so as to increase the wetting property of the coating

composition to the substrate as compared to the wetting property of a composition of compound (A) and catalyst (B) and no compound (C).

Furthermore, it is emphasized that the present claims recite a coating film adapted to be formed on a substrate. As indicated previously, Tamura, et al., discloses an article formed of the specified resin composition; and it is respectfully submitted that the teachings of Tamura, et al., even in combination with the teachings of the other references as applied by the Examiner, would have neither disclosed nor would have suggested such coating film as in the present claims, or the coating film provided on a substrate surface (or on a surface of an optical product), or coating process, as in various of the present claims.

Dohi, et al. discloses a method of producing composite optical elements, wherein a glass substrate is treated with a silanating agent to activate the substrate with respect to an organic compound, laminating the activated glass substrate with a mold having a desired configuration through the intermediary of a clear organic prepolymer, and then bombarding the laminate with application of energy such as light, heat or radiation to cause the prepolymer to further polymerize and, thereby, to form a thin layer of the cured organic compound on the glass substrate. See column 2, lines 20-35. Note, column 3, line 58, through column 4, line 1, for examples of the silanating agent; and column 4, lines 8-14 and 42-51, for further description of the silanating agent. In column 5, lines 11-18, this patent discloses that to further assist in the release of the glass-organic polymer composite from the mold after the polymerization of the organic prepolymer, a mold release such as stearic acid may be previously incorporated into the organic prepolymer.

No. WO 02/083763, Fuchs, Ishikawa, et al., Robertson and Lammerting have previously been discussed.

Even assuming, arguendo, that the teachings of Dohi, et al. were properly combinable with the teachings of the other references as applied by the Examiner, it is respectfully submitted that the combined teachings of these applied references would have neither disclosed nor would have suggested such coating film, or process of coating, or product formed, as in the present claims, formed from a coating composition including the modified silicone oil selected from the group as in claim 1, and, moreover, wherein the compound (C) of this coating composition has a wetting property in the coating composition with respect to the substrate, so as to increase the wetting property of the coating composition to the substrate as compared to the wetting property of a composition of compound (A) and catalyst (B) and no compound (C), and the advantages due thereto.

In this regard, it is emphasized that Dohi, et al. requires a separate silanating agent to activate the surface of the glass substrate, applied separately from the prepolymer, and it is respectfully submitted that the teachings of this reference would have taught away from the coating film obtained from the coating composition as in the present claims, and advantages thereof, including, inter alia, wherein a separate treating procedure is not necessary with a silanating agent.

It is emphasized that according to the present invention, the combination of a thiirane ring-containing compound, a catalyst for accelerating polymerization of the thiirane ring-containing compound, and a specified modified silicone oil in a specified amount, enables the silicone oil, heretofore used as a mold release agent, to function unexpectedly as a wetting agent, thus resulting in improvement of adhesion of the coating film to the substrate. As can be appreciated, if a material has a property of a mold releasing agent, improvement of adhesion to the substrate would not be achieved as achieved according to the present invention. Through use of the

specified modified silicone oil in amounts as in the present claims, together with the other components of the coating composition, an increased wetting property is achieved, so as to achieve objectives of the present invention.

The contention by the Examiner in the paragraph bridging pages 3 and 4 of the Office Action mailed July 2, 2009, that the phrase “coating film” does not appear to carry any weight that would distinguish the claims from that rendered obvious by the prior art, is respectfully traversed. As indicated in the foregoing, the phrase “coating film”, while set forth in the preamble, is necessary to give life and meaning the claims as a whole, and thus must be considered. Again, it is emphasized that Tamura, et al. discloses an article by itself, not a coating film.

Furthermore, such phrase must be given weight in connection with the process claims and product claims herein.

Comments by the Examiner in the first full paragraph on page 4 of the Office Action mailed July 2, 2009, are noted. Simply put, it is respectfully submitted that mold release agents, whose purpose is to release a structure from a surface (e.g., a mold surface, are directly contrary to materials having wetting property, providing increased contact to a surface and, e.g., increased adhesion.

The contention by the Examiner in the next-to-last paragraph on page 4 of the Office Action mailed July 2, 2009, that the siloxanes of the references “are structurally the same”, and thus they will necessarily have the same properties, is respectfully traversed. Initially, it is respectfully submitted that the Examiner has not established a specific teaching of the specific modified silicone oils of the present claims, in the teachings of the applied references, much less amount thereof as in the present claims. Moreover, it is respectfully submitted that the compound (C) has a wetting property in the coating composition, and unexpectedly acts as a wetting

agent therein, particularly in light of disclosure of mold release agents in the teachings of applied references. Contrary to the contention by the Examiner, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such coating film wherein in the coating composition for forming the coating film the compound (C) (a modified silicone oil) increases wetting property of the coating composition to the substrate.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

Applicants request any shortage of fees due in connection with the filing of this paper be charged to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (case 396.45772X00), and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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